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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ALEJANDRO, RAYMOND

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,614	BERNARD ET AL.	
	Examiner	Art Unit	
	Raymond Alejandro	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This office action is responsive to the amendment filed 02/06/08. The applicant has overcome the objections, the 35 USC 112 rejections and the 103 rejection over Kawano et al'435 in view of the DE'107. Refer to the abovementioned amendment for specific details on applicant's rebuttal arguments and remarks. However, the present claims are finally rejected over two previously stated art rejections as formulated hereinbelow on the written record:

Claim Disposition

1. Claim 6 has been cancelled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, 7, 9-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al 5824435 in view of Bernard et al 2003/0152834.

The present invention is directed to a secondary electrochemical cell wherein the disclosed inventive concept comprises the specific binder.

As to claim 1:

Kawano et al disclose an alkaline storage cell comprising a non-sintered positive electrode (COL 1, lines 5-10/ COL 4, line 62 to COL 5, line 5/COL 1, lines 30-35) wherein an active material paste is formed by the use of a polymeric binder and an electrically conductive powder, then, the paste is coated on the electrode substrate (COL 1, lines 58-65/COL 2, lines 44-53/COL 4, lines 44-55/ CLAIM 1). Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). *Thus, it is a two-dimensional substrate.* Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22). *Thus, it is conductive.* Kawano et al disclose the use of nickel hydroxide as electrochemical active material (COL 4, line 47/ COL 1, line 30-31).

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) and styrene-butadiene rubber (SBR) (COL 4, lines 45-55).

As to claims 2-3 and 5:

Kawano et al disclose specific amounts of the components forming the paste layer, for instance, disclosed is the use of 5 g of styrene-butadiene rubber (SBR) in a total amount of 170 g of all components forming the paste layer including nickel hydroxide (100 g), Co powder (10 g), the cellulose (55 g) and styrene-butadiene rubber (5 g) (COL 4, lines 44-55). *Thus, the weight % of Kawano et al's disclosed copolymer is approximately 2.94 % wt.*

With respect to the weight percent of the cellulose, as per the above constituents of Kawano et al's layer, the weight % of the cellulose compound is approximately 32.4 % wt.

As to claim 4:

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) (COL 4, lines 45-55).

As to claims 9-10:

Kawano et al disclose the use of Co powder (COL 4, line 47-50). *In this case, the Co powder is cobalt metal itself.*

As to claim 16:

Kawano et al disclose the use of a fabric of a polyamide resin combined together with the positive electrode (COL 4, lines 62-67). *Thus, it can be said that the layer contains polymer fibers as certain degree of interaction does occur at the interface between the active material layer of the electrode and the disclosed resin.*

As to claim 17:

Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22).

Kawano et al disclose an alkaline cell as described hereinabove. However, the preceding reference fails to expressly disclose the specific copolymer containing the styrene-acrylate copolymer, the specific weight percent of cellulose compound, the metal-hydride anode, and the specific additional hydroxide compounds and Y-based compound.

As to claim 1:

Bernard et al disclose secondary electrochemical cells (P0001) comprising alkaline electrolytes (P0021) wherein the electrode comprises a conductive support and a layer containing the active material and a binder (P0002, 0013) wherein the binder is preferably selected from the group consisting of styrene butadiene copolymer or styrene-acrylate copolymer (P0013/CLAIM 10). The electrochemically active material is constituted mainly by a nickel hydroxide (P0009). The positive electrode is also disclosed (P0014). The conductive support of Benard et al is a two-dimensional support such as a solid or perforated sheet, an expanded metal, a grid or a fabric (P0013).

As to claim 7:

Bernard et al that the positive electrode further contains hydroxide based on nickel, partially substituted by Co and/or Zn (P00014). *Thus, Benard et al readily envision the introduction of other hydroxide materials including Co-hydroxide and/or Zn-hydroxide.*

As to claims 11-13:

Bernard et al disclose the optional addition of a yttrium compound such as Y_2O_3 (P0014).

As to claim 18:

The DE'107 discloses alkaline electrolyte cells containing metal hydride as the negative electrode (P0002).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to employ the acrylate polymer of the DE'107 in the binder of Kawano et al to make a copolymer base material containing styrene and acrylate as the DE'107 discloses that the use of acrylate-based binder materials improves gravimetric capacity of batteries. Thus, the DE'107 provides a direct teaching that acrylate-based binder materials has beneficial effects on batteries; additionally, this is consistent with Kawano et al's teaching that polymeric-based materials are used as binders in order to increase the force of bonding between the electrode substrate and the active material layer which is necessary in non-sintered electrodes.

With respect to the specific additional hydroxide compounds and Y-based compound, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to use the specific additional hydroxide compounds and Y-based compound of Benard et al in the positive electrode of Kawano et al as Bernard et al disclose the foregoing hydroxide compounds and Y-based compound are additive for facilitating shaping of the electrode such as texture stabilizer or a thickener (P0013 & 0068).

With respect to the metal-hydride anode, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to use the metal hydride anode of the DE'107 as the negative electrode of Kawano et al as the DE'107 disclose the suitability of using metal hydride anodes in Ni-based alkaline batteries due to their chemical compatibility and electrochemical reactivity for converting chemical energy into

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electrical energy. As such, the DE'107 discloses that it is well-known in the art to couple Ni-based positive electrodes with metal hydride negative electrode to form an electrochemical cell device capable of generating electrical energy.

As to the specific weight percent of cellulose compound, it would have been obvious to a skilled artisan at the time invention was made to employ the specific weight percent of the cellulose compound as instantly claimed or any other suitable amount thereof as Kawano et al themselves disclose that polymeric-based materials are used as binders in order to increase the force of bonding between the electrode substrate and the active material layer which is necessary in non-sintered electrodes; thus, Kawano et al recognize the specific weight percent of the cellulose compound binder as a variable that achieves a recognized result (*i.e. amount of cellulose compound binder sufficient to maintain the force of bonding between the electrode substrate and the active material layer*) *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382; and *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Generally speaking, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Thus, it is prima-facie obvious to choose or select the specific amount of cellulose compound). *See MPEP 2144.05 Obviousness of Ranges*.

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6. Claims 1-5, 9-10 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al 5824435 in view of Vandayburg et al 6399246.

The present invention is directed to a secondary electrochemical cell wherein the disclosed inventive concept comprises the specific binder.

As to claim 1:

Kawano et al disclose an alkaline storage cell comprising a non-sintered positive electrode (COL 1, lines 5-10/ COL 4, line 62 to COL 5, line 5/COL 1, lines 30-35) wherein an active material paste is formed by the use of a polymeric binder and an electrically conductive powder, then, the paste is coated on the electrode substrate (COL 1, lines 58-65/COL 2, lines 44-53/COL 4, lines 44-55/ CLAIM 1). Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). *Thus, it is a two-dimensional substrate.* Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22). *Thus, it is conductive.* Kawano et al disclose the use of nickel hydroxide as electrochemical active material (COL 4, line 47/ COL 1, line 30-31).

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) and styrene-butadiene rubber (SBR) (COL 4, lines 45-55).

As to claims 2-3 and 5:

Kawano et al disclose specific amounts of the components forming the paste layer, for instance, disclosed is the use of 5 g of styrene-butadiene rubber (SBR) in a total amount of 170 g of all components forming the paste layer including nickel hydroxide (100 g), Co powder (10 g),

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the cellulose (55 g) and styrene-butadiene rubber (5 g) (COL 4, lines 44-55). *Thus, the weight % of Kawano et al's disclosed copolymer is approximately 2.94 % wt.*

With respect to the weight percent of the cellulose, as per the above constituents of Kawano et al's layer, the weight % of the cellulose compound is approximately 32.4 % wt.

As to claim 4:

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) (COL 4, lines 45-55).

As to claims 9-10:

Kawano et al disclose the use of Co powder (COL 4, line 47-50). *In this case, the Co powder is cobalt metal itself.*

As to claim 16:

Kawano et al disclose the use of a fabric of a polyamide resin combined together with the positive electrode (COL 4, lines 62-67). *Thus, it can be said that the layer contains polymer fibers as certain degree of interaction does occur at the interface between the active material layer of the electrode and the disclosed resin.*

As to claim 17:

Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22).

Kawano et al disclose an alkaline cell as described hereinabove. However, the preceding reference fails to expressly disclose the specific styrene-acrylate copolymer and the specific weight percent of cellulose compound.

As to claim 1:

Vandayburg et al discloses secondary electrochemical cells comprising a positive and negative electrode, an electrolyte which can be either an aqueous or non-aqueous electrolyte (Col 2, lines 5-22 & lines 49-57; COL 6, lines 20-21/CLAIM 1). A water soluble binder useful for preparing electrodes for either primary or secondary batteries, having either aqueous or non-aqueous electrolyte, containing a styrene-butadiene copolymer or a styrene-acrylate copolymer (ABSTRACT/COL 1, lines 9-22/COL 7, lines 38-42/CLAIM 1). Vandayburg et al discloses metal substrates such as a thin pliable sheet of metal i.e. metal foil (a two dimensional support) (COL 5, lines 50-58); and the advantage of using the disclosed binders in AQUEOUS electrolytes due to the excellent adhesive properties, flexibility and resilience (COL 6, lines 20-23).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to employ a styrene-acrylate copolymer of Vandayburg et al in the binder of Kawano et al as Vandayburg et al discloses that such a binder eliminates or reduces the need for organic solvents during preparation of an electrode made of a particulate active electrode material; and the binder exhibits good chemical resistance, adhesive properties, flexibility and resilience, making it well-suited for use in preparing batteries (Abstract).

As to the specific weight percent of cellulose compound, it would have been obvious to a skilled artisan at the time invention was made to employ the specific weight percent of the cellulose compound as instantly claimed or any other suitable amount thereof as Kawano et al themselves disclose that polymeric-based materials are used as binders in order to increase the force of bonding between the electrode substrate and the active material layer which is necessary

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in non-sintered electrodes; thus, Kawano et al recognize the specific weight percent of the cellulose compound binder as a variable that achieves a recognized result (*i.e. amount of cellulose compound binder sufficient to maintain the force of bonding between the electrode substrate and the active material layer*) *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382; and *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Generally speaking, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Thus, it is prima-facie obvious to choose or select the specific amount of cellulose compound). ***See MPEP 2144.05 Obviousness of Ranges.***

7. Claims 7 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Kawano et al 5824435 in view of Bernard et al 2003/0152834; and/or b) Kawano et al 5824435 in view of Vandayburg et al 6399246 as applied to claims 1 and 6 above, and further in view of Miyamoto et al 2005/0244712.

The preceding prior art references are applied, argued and incorporated herein for the reasons manifested above. However, none of the preceding reference expressly disclose the specific hydroxide compounds and the specific Y-based or Yb-based compounds.

As to claim 7:

Miyamoto et al disclose a sealed nickel-based alkaline electrochemical cell (TITLE/ABSTRACT/P0039-0040) wherein Co-hydroxide or hydroxide based on nickel doped with Zn (*the hydroxide of an element such as Zn*) are added to the positive electrode material including nickel hydroxide (P0025-0026). Disclosed is that positive electrode active substances comprising these additives have quite excellent conductivity (P0025).

As to claims 11-15:

Miyamoto et al disclose a sealed nickel-based alkaline electrochemical cell (TITLE/ABSTRACT/P0039-0040) wherein the capacitance preserving ratio at the time of storage can be improved by adding compounds of Y and Yb to the positive electrode active substance comprising nickel hydroxide (P0027). Examples of those compounds are Y_2O_3 and Yb_2O_3 (P0027).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the field of invention at the time invention was made to employ the specific hydroxide compounds of Miyamoto et al in the electrode material of the combined prior art references as set forth above as Miyamoto et al teach that positive electrode active substances comprising these additives have quite excellent conductivity (P0025).

With respect to the specific Y-based or Yb-based compounds, it would have been obvious to a person possessing a level of ordinary skill in the field of invention at the time invention was made to employ the specific Y-based or Yb-based compounds of Miyamoto et al in the electrode material of the combined prior art references as set forth above as Miyamoto et al teach that the capacitance preserving ratio at the time of storage can be improved by adding

the specific compounds of Y and Yb to the positive electrode active substance comprising nickel hydroxide (P0027).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over a) Kawano et al 5824435 in view of Bernard et al 2003/0152834; and/or b) Kawano et al 5824435 in view of Vandayburg et al 6399246 as applied to claims 1 and 6 above, and further in view of Takemura et al RE37935.

The preceding prior art references are applied, argued and incorporated herein for the reasons manifested above. However, none of the preceding reference expressly disclose the specific grain size of the nickel hydroxide.

Takemura et al disclose an alkaline storage cell like a nickel-cadmium storage cell (COL 1, lines 13-25) wherein nickel hydroxide having an average grain size of 1.5-200 μm is used (COL 4, lines 21-30). Specifically, **EMBODIMENT 1** uses a nickel hydroxide whose grain shape is globe (*spheroidal shape*) with an average grain size of 10 μm (COL 5, lines 40-50). Thus, **EMBODIMENT 1** shows the grain size of the nickel hydroxide with sufficient specificity.

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the field of invention at the time invention was made to employ the nickel hydroxide having specific grain size of Takemura et al in the electrode material of the combined prior art references as set forth above as Takemura et al teach that such a specific grain size is a suitable grain size for nickel hydroxide active materials because smaller grain sizes can be especially conspicuous as it interferes with the dissolution of the active material in the electrolyte and bigger grain sizes are not desirable because nickel hydroxide formed of so large grains is

hard to add uniformly to the active material. Thus, the specific grain size of 10 μm as embodied in **EMBODIMENT 1** is well within Takemura et al's disclosed grain size range and represents a desirable grain size exhibiting the beneficial effects disclosed by Takemura.

Response to Arguments

1. Applicant's arguments (and amendment) with respect to the 103 rejection over Kawano et al'435 in view of the DE'107 have been fully considered and are persuasive. Thus, the foregoing rejection has been withdrawn.
2. Applicant's arguments filed 02/06/08 have been fully considered but they are not persuasive.
3. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In general, most of applicant's arguments against the 103 rejections based upon the combination of Kawano et al'435 in view of Bernard et al'834 and/or Kawano et al'435 in view of Vandayburg et al'246 appear to be grounded on independent analysis and discussions of each reference alone or singly instead of the suggested teachings provided by their respective combinations. As such, all of the arguments advanced by the applicant that are based on piecemeal analysis of a reference have been considered but found unconvincing.

To summary what the prior art of record teaches or fairly suggests, the Examiner is reproducing herein for applicant's convenience what teachings are covered by the art of record:

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a) Kawano et al disclose an alkaline storage cell comprising a non-sintered positive electrode (COL 1, lines 5-10/ COL 4, line 62 to COL 5, line 5/COL 1, lines 30-35) wherein an active material paste is formed by the use of a polymeric binder and an electrically conductive powder, then, the paste is coated on the electrode substrate (COL 1, lines 58-65/COL 2, lines 44-53/COL 4, lines 44-55/ CLAIM 1). Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). Thus, it is a two-dimensional substrate. Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22). Thus, it is conductive. Kawano et al disclose the use of nickel hydroxide as electrochemical active material (COL 4, line 47/ COL 1, line 30-31). As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) and styrene-butadiene rubber (SBR) (COL 4, lines 45-55).

b) Bernard et al disclose secondary electrochemical cells (P0001) comprising alkaline electrolytes (P0021) wherein the electrode comprises a conductive support and a layer containing the active material and a binder (P0002, 0013) wherein the binder is preferably selected from the group consisting of styrene butadiene copolymer or styrene-acrylate copolymer (P0013/CLAIM 10). The electrochemically active material is constituted mainly by a nickel hydroxide (P0009). The positive electrode is also disclosed (P0014). The conductive support of Benard et al is a two-dimensional support such as a solid or perforated sheet, an expanded metal, a grid or a fabric (P0013).

c) Vandayburg et al discloses secondary electrochemical cells comprising a positive and negative electrode, an electrolyte which can be either an aqueous or non-aqueous electrolyte (Col 2, lines 5-22 & lines 49-57; COL 6, lines 20-21/CLAIM 1). A water soluble binder useful for preparing electrodes for either primary or secondary batteries, having either aqueous or non-aqueous electrolyte, containing a styrene-butadiene copolymer or a styrene-acrylate copolymer (ABSTRACT/COL 1, lines 9-22/COL 7, lines 38-42/CLAIM 1). Vandayburg et al discloses metal substrates such as a thin pliable sheet of metal i.e. metal foil (a two dimensional support) (COL 5, lines 50-58); and the advantage of using the disclosed binders in AQUEOUS electrolytes due to the excellent adhesive properties, flexibility and resilience (COL 6, lines 20-23).

The Examiner's rejection as postulated by the Examiner hereinabove combines a)

Kawano et al with b) Bernard et al, and a) Kawano et al with c) Vandayburg et al. The examiner verily believes that the combined prior art clearly teaches or suggests all of the features claimed by the applicant. Applicant is kindly requested to review the foregoing disclosures for better understanding of art rejections, and to analyze what is within the purview of the skilled artisan.

4. With respect to applicant's contention that Kawano et al disclose a three dimensional electrode instead of a two dimensional conductive support, the examiner respectfully disagrees with. For instance, Kawano et al discuss the use of an expanded metal plate and/or a punched metal plate; and that these electrode substrates do not have a three dimensional construction as in the porous, foamed nickel member (COL 1, lines 39-44). This disclosure suffices to contend that Kawano et al does directly or indirectly envision the use of two-dimensional substrates or support independently of the disclosed corrugated structure of the support. However, if applicant is still unconvinced, it is worth to note that both Benard et al (P0013) and Vandayburg et al (COL 5, lines 50-58) do disclose, teach, employ or exemplify using two dimensional conductive support for holding the electrochemically active material and binders. Therefore, directly or indirectly, vaguely suggested or exemplified, the prior art of record does envision utilizing two-dimensional supports for holding the electrochemically active material and binders.

5. In response to applicant's argument that "*Kawano et al solves the problem of improving the bonding force between the substrate and the active materials*", the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

6. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e., the thickness of Kawano et al's electrode and the negative electrode [polarity] of Benard et al's electrode*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van*

Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The examiner does not understand why applicant argues against the thickness of Kawano et al's electrode because the claimed invention does not even claim or suggest a thickness. Therefore, the thickness of the electrode is not at issue at the present time. If applicant desires to have it considered by the Examiner, such a limitation must be incorporated into the claimed invention.

Applicant has also found room in his contention to bring into discussion that Benard et al teach a negative electrode, not a positive electrode. Well, an examination of applicant's invention reveals that the polarity of the electrode is not at issue because it is not defined in the presently independent claim.

7. If a person of ordinary skill can implement a predictable variation or obtain a predictable result or characteristic, 35 USC 103 likely bars its patentability. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (U.S. 2007) & *KSR International Co. v. Teflex Inc.*, 550 US, 82 USPQ2d 1385 (2007).

If a technique has been used to improve one device or product (*i.e. using a binder made of styrene-acrylate copolymer*), and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way (*i.e. electrodes for use in aqueous or non-aqueous electrochemical cells*) using the known technique is obvious unless its actual application is beyond his or her skill. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (U.S. 2007) & *KSR International Co. v. Teflex Inc.*, 550 US, 82 USPQ2d 1385 (2007).

The present claims are obvious because the result/combination of this teaching (*the binder made of styrene-acrylate copolymer*) would predictably lead to a satisfactory product, article or step (*i.e. an electrode for use in aqueous or non-aqueous electrochemical cells*). *See*

KSR Int'l Co. v. Teleflex, Inc., 127 S. Ct. 1727, 1739 (U.S. 2007) & *KSR International Co. v. Teflex Inc.*, 550 US, 82 USPQ2d 1385 (2007).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action (for claim 8). Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

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/Raymond Alejandro/
Primary Examiner, Art Unit 1795